REMARKS

Amendments

Claim 1 is amended to incorporate the limitations of claims 5 and 7; claims 12 and 13 are amended to delete the unnecessary "substantially"; and claims 20-22 are canceled. These amendments introduce no new matter.

Definiteness

The amended claims avoid the objected-to terms.

Cited Art

The record does not indicate that the cited Toole dissertation is prior art. The ProQuest letter ("Letter") dated Jan 16, 2006 (provided with the supplemental Office Communication dated May 18, 2006) does not allege facts evidencing that the dissertation was in fact published prior to Dec 21, 1998. The Letter only states that ProQuest "completed the processing" of the dissertation on Dec 14, 1998, "at which time copies were then available for sale". It is not evident what is meant by "completed the processing". An academic journal can be reasonably said to have completed the processing of a manuscript (input, review, typset, proof and print) long before the paper is actually disseminated or published. Furthermore, it is not apparent what is meant by "available for sale", nor does that imply any actual dissemination or publication.

In an effort to clarify these questions, the undersigned spoke with the author of the ProQuest letter on Jun 5, 2006, and was informed that the as of Dec 14, 1998 or shortly thereafter, someone with knowledge of the dissertation could have purchased it from UMI (ProQuest's predecessor), and that the dissertation citation and abstract were subsequently published by UMI in Jan 1999 (UMI Proquest Full Citation & Abstract Publication No. AAT9839498, attached herewith; see line reporting, "SOURCE DAI-B 59/07, p.3256, Jan 1999).

Hence there is no evidence of record indicating the cited Toole dissertation was available to the interested public prior to Jan 1999; there is no evidence of record that the cited dissertation was retrievable through a searchable index prior to Jan 1999; and there is no evidence of record that the cited dissertation was in fact disseminated or published prior to Jan 1999. While there is no evidence of record that the cited dissertation is applicable prior art, Applicants have elected to

limit the claims of this application to subject matter deemed patentable even if the cited dissertation were to be later shown to be applicable prior art.

Double Patenting

The subject claims have been canceled.

The Examiner is invited to call the undersigned if she would like to amend the claims to clarify the foregoing or seeks further clarification of the claim language. Please charge/credit our Deposit Acct No.19-0750 (order B00-016-2) any fees, extensions of time, or overcharges for this communication.

Respectfully submitted,
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Encl. UMI Proquest Full Citation & Abstract Publication No. AAT9839498

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Mission Statement, USPTO External Customer Services Guide

Full Citation & Abstract

PRICING ?

PUBLICATION NUMBER AAT 9839498

TITLE Process and structure in the assembly of a cyanobacterial light-harvesting complex

AUTHOR Toole, Colleen Mary

DEGREE PhD

SCHOOL THE UNIVERSITY OF TULSA

DATE 1998

PAGES 177

ADVISER Anderson, Lamont

ISBN 0-591-93175-3

SOURCE DAI-B 59/07, p. 3256, Jan 1999

SUBJECT BIOLOGY, MOLECULAR (0307); CHEMISTRY, BIOCHEMISTRY (0487); BIOLOGY, MICROBIOLOGY (0410); BIOLOGY, PLANT PHYSIOLOGY (0817)

DIGITAL FORMATS 5.88Mb image-only PDF

The light-harvesting capacity of cyanobacteria is a function of a complex macromolecular structure, the phycobilisome, that resides on the surface of the photosynthetic membrane in contact with the PSII chlorophyll reaction centers. The major components are the phycobiliproteins, which have distinct spectral properties due to covalently attached chromophores which vary in type and number. The basic unit of assembly structure is a heterodimer formed by two subunits, $/alpha$ and $/beta$. The biliprotein subunit structures all have the same structural motif that is reflected by significant amino acid sequence similarities across the different classes and between subunits. A protein engineering approach was utilized to examine structural features that may be involved in molecular recognition at two early steps of phycobilisome assembly, the association between $/alpha$ and $/beta$ subunits and the selective attachment of chromophores. Previous work characterizing the effects of bilin deletions in phycocyanin subunits suggested that absence of bilin decreases protein stability in vivo. Sedimentation equilibrium experiments with purified phycocyanins has now established that bilins contribute directly to heterodimer assembly. The impact of bilins on assembly and subunit stability is incorporated in a refined model of early events in phycobilisome biosynthesis. The central bilin binding domain consists of the E and F $/alpha$-helices in all biliprotein subunits. Some amino acids in the E-F domain of the $/beta$ subunit are class-conserved and their structural locations suggest potential roles in differential bilin attachment and subunit interactions. Domain exchange and site-directed mutatgenesis

were employed to determine individual and combined contributions of these amino acids to phycocyanin stability in vivo. Residue $/beta$86 facilitates subunit folding by stabilizing contacts between $/alpha$-helices in the globin fold, $/beta$100 enhances heterodimer formation and may be important for subunit selectivity during assembly and sidechains at $/beta$75/76 are contacts for higher aggregation states in phycobiliproteins. An affinity tag was placed on the carboxyl terminal of the phycocyanin $/beta$ subunit to facilitate purification of phycocyanin subunits for further in vitro experimentation. Affinity purification and the effect of the tag on phycobilisome assembly is discussed.